Healthy Muscles Matter

Basic facts about muscles

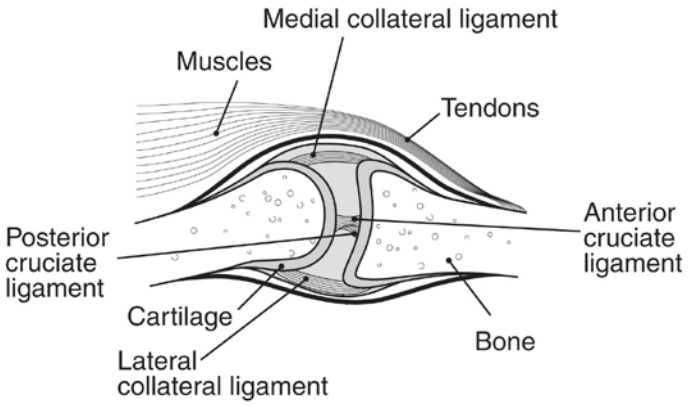
Did you know you have more than 600 muscles in your body? These muscles help you move, lift things, pump blood through your body, and even help you breathe.

When you think about your muscles, you probably think most about the ones you can control. These are your voluntary muscles, which means you can control their movements. They are also called skeletal (SKEL-i-tl) muscles, because they attach to your bones and work together with your bones to help you walk, run, pick up things, play an instrument, throw a baseball, kick a soccer ball, push a lawnmower, or ride a bicycle. The muscles of your mouth and throat even help you talk!

Keeping your muscles healthy will help you to be able to walk, run, jump, lift things, play sports, and do all the other things you love to do. Exercising, getting enough rest, and eating a balanced diet will help to keep your muscles healthy for life.

Different kinds of muscles have different jobs

- **Skeletal** muscles are connected to your bones by tough cords of tissue called tendons (TEN-duhns). As the muscle contracts, it pulls on the tendon, which moves the bone. Bones are connected to other bones by ligaments (LIG-uh-muhnts), which are like tendons and help hold your skeleton together.



A joint showing muscles, ligaments, and tendons. (Representation)

Muscles of the Arm

- **Smooth** muscles are also called involuntary muscles since you have no control over them. Smooth muscles work in your digestive system to move food along and push waste out of your body. They also help keep your eyes focused without your having to think about it.
- **Cardiac** (KAR-dee-ak) muscle. Did you know your heart is also a muscle? You have no control over this muscle. It pumps blood through your body, changing its speed to keep up with the demands you put on it. It pumps more slowly when you're sitting or lying down, and faster when you're running or playing sports and your skeletal muscles need more blood to help them do their work.

Why healthy muscles matter to you

Healthy muscles let you move freely and keep your body strong. They help you to enjoy playing sports, dancing, walking the dog, swimming, and other fun activities. And they help you do those other (not so fun) things that you have to do, like making the bed, vacuuming the carpet, or mowing the lawn.

Healthy muscles let you move freely and keep your body strong.

Strong muscles also help to keep your joints in good shape. If the muscles around your knee, for example, get weak, you may be more likely to injure that knee. Strong muscles also help you keep your balance, so you are less likely to get hurt by slipping or falling.

And remember—the exercises that make your skeletal muscles strong will also help to keep your heart muscle strong!

What can go wrong?

Injuries

Almost everyone has had sore muscles after exercising or working too much. This is known as muscle strain. Muscle strains can be mild (the muscle has just been stretched too much) to severe (the muscle actually tears). Maybe you lifted something that was too heavy and the muscles in your arms were stretched too far. Lifting heavy things in the wrong way can also strain the muscles in your back. This can be very painful and can even cause an injury that will last a long time and make it hard to do everyday things.

The tendons that connect the muscles to the bones can also be strained if they are pulled or stretched too much. If a ligament (remember, they connect bones to bones) is stretched or pulled too much, the injury is called a sprain. Most people are familiar with the pain of a sprained ankle.

Contact sports like soccer, football, hockey, and wrestling can often cause strains. Sports in which you grip something (like gymnastics or tennis) can lead to strains in your hand or forearm.

Diseases

A number of diseases can affect your muscles. Some, like muscular dystrophy (DIS-truh-fee) and Pompe (POM-pay) disease, affect the muscles directly. Other diseases, like polio (POH-lee-oh) and multiple sclerosis (skli-ROH-sis), attack the nerves that control the muscles, so that the muscles become weak or paralyzed.

Muscles that are not used can get smaller and weaker. This is known as atrophy.

Muscles that are not used can get smaller and weaker. This is known as atrophy (A-truh-fee). If you have ever had a cast on your arm or leg, you might have noticed that the muscles in that arm or leg were smaller when the cast came off. It's important to exercise your muscles after an injury like this, so that they will grow back to the right size and work the way they should.

How do I keep my muscles healthy?

Exercise

When you make your muscles work by exercising, they respond by growing stronger. They may even get bigger by adding more muscle tissue. This is how bodybuilders get such big muscles, but your muscles can be healthy without getting that big.

There are lots of things you can do to exercise your muscles. Walking, jogging, lifting weights, playing tennis, climbing stairs, jumping, and dancing are all good ways to exercise your muscles. Swimming and biking will also give your muscles a good workout. It's important to get different kinds of exercise to work all your muscles. And any exercise that makes you breathe harder and faster will help exercise that important heart muscle as well!

Try to get 60 minutes of exercise every day.

Try to get 60 minutes of exercise every day. It doesn't have to be all at once. You can exercise several times during the day, as long as you get 60 minutes worth of exercise by the end of the day.

Eat a healthy diet

You really don't need a special diet to keep your muscles in good health. Eating a balanced diet will help manage your weight and provide a variety of nutrients for your muscles and overall health. A balanced diet:

- Has a lot of fruits, vegetables, whole grains, and fat-free or low-fat milk and dairy products.
- Includes protein from lean meats, poultry, fish, beans, eggs, and nuts.
- Is low in saturated fats, trans fats, cholesterol, salt (sodium), and added sugars.

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For more information on a healthy diet, see www.mypyramid.gov.

Prevent injuries

To prevent sprains, strains, and other muscle injuries:

- **Warm up and cool down.** Before exercising or playing sports, warm-up exercises, such as stretching and light jogging, can make it less likely that you'll strain a muscle. They are called warm-up exercises because they really do make the muscles warmer—and more flexible. Cool-down exercises loosen muscles that have tightened during exercise.
- **Wear the proper protective gear** for your sport, for example pads or helmets. This will help reduce your risk for injuring your muscles or joints.
- Remember to **drink lots of water** while you're playing or exercising, especially in warm weather. If your body's water level gets too low (dehydration [dee-hahy-DREY-shun]), you could get dizzy or even pass out. Dehydration can cause many medical problems.

- **Don't try to "play through the pain."** If something starts to hurt, STOP exercising or playing. You might need to see a doctor, or you might just need to rest the injured part for a while.
- **Be careful when you lift heavy objects.** Keep your back straight and bend your knees to lift the object. This will protect the muscles in your back and put most of the weight on the strong muscles in your legs. Get someone to help you lift something heavy.

Don't try to "play through the pain."

Start now

Keeping your muscles healthy will help you have more fun and enjoy the things you do. Healthy muscles will help you look your best and feel full of energy. Start good habits now, while you are young, and you'll have a better chance of keeping your muscles healthy for the rest of your life.

Definitions

Atrophy (A-truh-fee). Wasting away of the body or of an organ or part, as from defective nutrition, nerve damage, or lack of use.

Cardiac (KAR-dee-ak) **muscle**. The heart muscle. An involuntary or smooth muscle over which you have no control.

Dehydration (dee-hahy-DREY-shun). A condition that occurs when you lose more fluids than you take in. Your body is about two-thirds water. When you get dehydrated, it means the amount of water in your body has dropped below the level needed for normal body function.

Ligament (LIG-uh-muhnt). Tough cords of tissue that connect bones to other bones at a joint.

Multiple sclerosis (skli-ROH-sis) **(MS)**. A nervous system disease that affects your brain and spinal cord. It damages the myelin sheath, the material that surrounds and protects your nerve cells. This damage slows down or blocks messages between your brain and your body, leading to the symptoms of MS.

Muscular dystrophy (DIS-truh-fee) **(MD)**. A group of more than 30 inherited diseases that cause muscle weakness and muscle loss. Some forms of MD appear in infancy or childhood, while others may not appear until middle age or later. Most people with MD eventually lose the ability to walk.

Polio (POH-lee-oh). A disease caused by a virus that attacks your nervous system. It most commonly affects young children. In rare cases, polio infection can cause paralysis. Polio vaccination will protect most people for life. The United States and most other countries eliminated polio decades ago, except for rare cases.

Pompe (POM-pay) **disease**. A rare genetic disorder that results in profound muscle weakness. The heart and skeletal muscles are most affected.

Skeletal (SKEL-i-tl) **muscle**. Muscles that attach to bones.

Sprain (spreyn). A stretched or torn ligament. Ankle and wrist sprains are common. Symptoms include pain, swelling, bruising, and being unable to move the joint.

Strain (streyn). A stretched or torn muscle or tendon. Twisting or pulling these tissues can cause a strain. Strains can happen suddenly or develop over time. Back and hamstring muscle strains are common. Many people get strains playing sports.

Tendon (TEN-duhn). Tough cords of tissue that connect muscles to bones.

Voluntary muscles. Muscles that you can control.

For More Information

For more information on muscles, contact:

National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS) Information Clearinghouse

National Institutes of Health

Toll free: 877–22–NIAMS (226–4267)

Email: NIAMSinfo@mail.nih.gov

Web site: www.niams.nih.gov

Check out these Web sites:

For information about sports injuries and sprains and strains, visit:

- **Handout on Health: Sports Injuries:** www.niams.nih.gov/Health_Info/Sports_Injuries/default.asp
- **Questions and Answers about Sprains and Strains:** www.niams.nih.gov/Health_Info/Sports_Injuries/default.asp
- **MedlinePlus: Sprains and Strains:** www.nlm.nih.gov/medlineplus/sprainsandstrains.html

For information on muscular dystrophy, multiple sclerosis, or polio, contact:

- **National Institute of Neurological Disorders and Stroke, NIH**
  Toll free: 800–352–9424
  Web site: www.ninds.nih.gov
- **NIH Office of Rare Diseases Research**
  Phone: 301–402–4336
  Email: ordr@od.nih.gov
  Web site: http://rarediseases.info.nih.gov
- **Medline Plus:**
  –www.nlm.nih.gov/medlineplus/multiplesclerosis.html
  –www.nlm.nih.gov/medlineplus/musculardystrophy.html

For information about exercise, visit:

- **Centers for Disease Control and Prevention: Physical Activity Guidelines:** www.cdc.gov/physicalactivity/everyone/guidelines/children.html
- **Healthfinder.gov: Physical Activity:** www.healthfinder.gov/prevention/ViewTopic.aspx?topicID=22&areaID=5&TopicContentID=258
- **President's Council on Fitness, Sports, & Nutrition:** www.fitness.gov/
- **Kids.gov: Health, Fitness, and Safety:** www.kids.gov/6_8/6_8_health_fitness.shtml

For information about a balanced diet, visit:

- **MyPyramid.gov: Dietary Guidelines:** www.mypyramid.gov/guidelines/index.html
- **Healthfinder.gov: Eat Healthy:** www.healthfinder.gov/prevention/ViewTopic.aspx?topicID=21&areaID=5&TopicContentID=106

This fact sheet was made for you by the National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS), a part of the Department of Health and Human Services' National Institutes of Health. For more information about the NIAMS, call the information clearinghouse at 301–495–4484 or toll free at 877–22–NIAMS (226–4267) or visit the NIAMS Web site at www.niams.nih.gov.

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